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ART UNIT 1612	PAPER NUMBER 9
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PI ase find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.  
**08/884,873**

Applicant(s)  
**Cook, Philip Dan**

Examiner  
**Joseph W. Ricigliano Ph. D.**

Group Art Unit  
**1648**



☒ Responsive to communication(s) filed on Nov 2, 1998

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-19 and 24-31 is/are pending in the application.

Of the above, claim(s) 27-30 is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-19, 24-26, and 31 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☒ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 8

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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### **DETAILED ACTION**

1. This action is responsive to the amendment of 11/2/98.
2. Claims 1 and 20-23 have been canceled. Claims 27-30 are withdrawn as being drawn to a non-elected invention. Claim 31 has been added.
3. Claims 2-19, 24-26 and 31 are being examined on their merits.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 7, 9, 11, 12 and 17-19 are rejected under 35 USC 112 second paragraph for the reasons of record in paper number 4.

### ***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 31, 2, 3, 5 and 13-15 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Michnick et al [US 5,470,878] for reason of record in the rejection of claims 1, 2, 3, 5 and 13-15 under 35 U.S.C. 102(b) as being clearly anticipated by Michnick et al [US 5,470,878] in paper number 4.

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7. Claims 31, 2-15 and 24-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Summerton et al [5,506,337] for reason of record in the rejection of claims 1-15 and 20-26 under 35 U.S.C. 102(b) as being clearly anticipated by Michnick et al [US 5,470,878] in paper 4.

8. Claims 31, 2-3, 5-15, 17-19 and 24-26 are rejected under 35 U.S.C.102(b) as being anticipated by Pavia et al for reasons of record in the rejection of claims 1-3, 5-15, and 17-26 under 35 U.S.C.102(b) as being anticipated by Pavia et al in paper number 4.

### *Response to Arguments*

#### *Claim Rejections - 35 USC § 112*

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 7, 9, 11, 12 and 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claims 7 and 9 are directed to scaffolds or tethers that have an atom that is nucleophilic.

This is indefinite because it is unclear under what conditions the atom is to be nucleophilic.

Therefore, it is not possible to clearly define the metes and bounds of the claimed invention.

12. Claims 11 and 12 are directed to substituents that are electrophilic. This is indefinite because it is unclear under what conditions the substituents are to be electrophilic. Therefore, it is not possible to clearly define the metes and bounds of the claimed invention.

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Applicants assert that nucleophilicity and electrophilicity is a property inherent to “any given atom” and that the term is routinely used by the art skilled.

This argument is not found persuasive because it does not address the basis of the rejection. The rejection was directed to the conditions the atoms in question were to be considered electrophilic or nucleophilic. Moreover, one skilled in the art would recognize that atoms are not inherently electrophilic or nucleophilic under all conditions. Rather the structures which incorporates them and the conditions may strongly influence the electrophilicity or nucleophilicity of an atom. Take for example a carbon atom. As a carbanion it can be quite nucleophilic and as a carbonium ion it can be quite electrophilic. Even a simple benzene ring can undergo both electrophilic substitution and nucleophilic substitution reactions depending on the substitution and reaction conditions. There for it remains that the instant claims are rejected as being indefinite because it is not possible to determine the metes and bounds of the subject matter as claimed.

13. In view of applicants clarification on the record the rejection of claims 14 and 15 under 35 USC 112 second paragraph is withdrawn.

14. Claim 19 recites “wherein the heterocyclic portion of said chemical compounds are ring-opened, ring expanded, bicyclized, or altered in subsequent to said substitution at said at least one of said funtionalizable atoms.” This is indefinite because upon ring-opening, ring expansion, bicyclization, or alteration subsequent to the substitution at one funtionalizable atoms by unstated processes with unspecified reagents it is not be possible to clearly define the structure of the

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products. Therefore it is not possible to clearly define the metes and bounds of the claimed invention.

and

Claim 19 recites the phrase "ring closed" in relation to the purine or pyrimidine heterocyclic scaffolds. Since these scaffolds are already ring structures, the concept of closing a ring in the heterocycle portion of these structures is vague and indefinite. For example it is unclear if applicant intends to close a new ring bridging the purine scaffold or if applicant intends to close the 5 member ring of a purine to produce a substituted pyrimidine. Therefore, it is not possible to clearly define the metes and bound of the claimed invention.

Applicants assert that the ring compounds of the invention are fully capable of ring-opening, ring expansion, bicyclization or ring closing reactions and that upon knowing the compounds with its substituents, reagents, solvents etc. the predicted structures of the product compounds could be predicted. This argument is not found persuasive because the applicants are arguing limitations not present in the claims. Applicants have not stated the compounds with their substituents explicitly in the claims nor have they provided any indication of the reagents, solvent or conditions to be utilized in the reactions. Therefore it remains that this claim is indefinite as it is not possible to determine the metes and bounds of the invention as claimed.

15. The examiner thanks applicant for bringing attention to the fact that the rejection of claim 26 under 35 USC 112 was inadvertently recited claim 25. In view of applicants amendment to

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delete a form of decay and simply recite a pest, which is defined by Webster's Dictionary as a plant or animal detrimental to humans or human concerns, the rejection is withdrawn.

16. Therefore, ~~the rejection of~~ claims 7, 9, 11, 12 and 17-19 are rejected under 35 USC 112 second paragraph for the reasons above and for the reasons of record in paper number 4.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 31, 2, 3, 5 and 13-15 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Michnick et al [US 5,470,878] for reason of record in the rejection of claims 1, 2, 3, 5 and 13-15 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Michnick et al [US 5,470,878] rejection of claims in paper number 4.

Applicants assert that the Michnick reference only teaches compounds that are intended to be utilized individually and go on to assert that all of the examples are limited to the use of single compounds. This argument has been fully considered but is not found persuasive because as recite on page 7 of the office action of 5/8/98 it was noted that the Michnick reference teaches pharmaceutical compositions are "comprised of one or a plurality of inventive compounds," (col 22 lines 32-38), which reads on a mixture. Applicants' assertion that Michnick does not teach how to use a mixture is moot because applicants' claims are directed toward a mixture not a method of use, and as recited above and recited previously Michnick et al anticipate the mixtures of the instant claims for the reasons above and for the reasons of record in paper number 4.

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18. Claims 31, 2-15 and 24-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Summerton et al [5,506,337] for reason of record in the rejection of claims 1-15 and 20-26 under 35 U.S.C. 102(b) as being clearly anticipated by Michnick et al [US 5,470,878] in paper number 4.

Applicants assert that the compounds in Summerton have a morpholino backbone which is the scaffold not the purine or pyrimidines attached thereto. Applicants go on to assert that their invention is distinct from that of Summerton et al because Summerton et al teach oligomers while their invention does not.

Applicants' arguments filed 11/02/98 have been fully considered but they are not persuasive. First, the concept that Summerton only teaches oligomeres is not found persuasive because applicants originally recited claims did not exclude the presence of other members of an oligomeric chain as substituents. As for the claims as amended the broad recitation of what a substituted compound may (as recited on page 17 of the specification) does not exclude additional members of the oligomeric chain as being substituent or part of the substituents present. Second, it should be noted also that an oligomer can be viewed as being comprised of as little as two units. [Applicants are directed to figure 14 (1) of Summerton et al as a reference for example]. In a dimer as set forth here applicants' L (Summerton's Xi) could be a substituted purine attached to a substituted heterocycle; morpholine is specifically recited by applicants as heterocycle on page 15 of the specification. [It is noted that applicants do not recite any specific limitation on how the L groups are linked to the T groups.] The following morpholino ring of the dimer can be part of the tether which can be a N, O, S containing heterocycle as set forth in claim



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31. Applicants' core scaffold can be a substituted purine (Summerton's  $X_{i+1}$ ). It is noted that applicants' proviso stating R3 and R5 are not morpholino does not overcome this rejection because only one would need be a morpholino group. Moreover there are other ways in which Summerton can be read on the instant claims. Therefore, Summerton et al anticipates claims 31, 2-15 and 23-26 for the reasons above and for the reasons of record in paper number 4.

19. Claims 31, 2-3, 5-15, 17-19 and 24-26 are rejected under 35 U.S.C.102(b) as being anticipated by Pavia et al for reasons of record in the rejection of claims 1-3, 5-15, and 17-26 under 35 U.S.C.102(b) as being anticipated by Pavia et al in paper number 4.

Applicants assert that by deletion of claim 1 and substitution of claim 27 in its place along with the cancellation of claims 20-23 they have rendered the rejection moot. It is noted for the record that applicants have substituted claim 31 for claim 1.

Applicants' arguments filed 11/02/98 have been fully considered but they are not persuasive. Applicants' arguments are not persuasive because Pavia et al reads on the compounds of the instant invention. For example one ring in Pavia can be a pyrimidine ring and the second ring a heterocycle (equivalent to applicants' L group). The M group which connects them can be could be a bond which would be equivalent to applicants T group. Therefore, Pavia et al anticipate the inventions of the instant claims for the reasons above and for the reasons of record in paper number 4.

*New Grounds of Rejection*

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***Claim Rejections - 35 USC § 101***

20. Claims 31 and its dependent claims 2-19 and 24-26 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either an asserted utility or a well established utility.

The mixtures of claim 31 and its dependent claims are directed to compounds with a pentavalent carbon structure. Since these compounds cannot be made without violation of the accepted valency of a carbon atom the compounds cannot be utilized in a mixture for any utility.

Claim 31 and its dependent claims 2-19 and 24-26 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific, credible or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

***Claim Rejections - 35 USC § 112***

21. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

22. Claim 31 and its dependent claims 2-19 and 24-26 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way

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as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicants have amended the claims to draw all of them to be directly or indirectly dependent on claim 31. Claim 31 now recites a series of chemical structures which and specific substituents which do not appear to be described in the specification in such a way as to indicate applicants were in possession of the claimed subject matter at the time the application was filed.

Applicants have not indicated where support for the specific structures recited in claim 31 may be found in the specification. The examiner notes the following in reference to the structures set forth in the claims:

The purine structures set forth on pages 27 and 39-41 do not appear to provide support for structures IV and V because they do not indicate the same substitution patterns or number of substituents present in the invention of the instant claims.

There does not appear to be support for the structure of compounds I-III in the specification among the pyrimidine structures such as that on pages 44, 47 and 50 of the specification because these structures do not have the same number of substituents.

The tether "T" formula as set forth in claim 31 does not appear to be supported in the specification.

23. Claims 31 and its dependent claims 2-19 and 24-26 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for mixtures which do utilize the compound of structure V, does not reasonably provide enablement for mixture which do utilize

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compounds of structure V. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Claim 31 and its dependent claims 2-19 and 24-26 recite a structure V having a pentavalent carbon atom (attached to the carbonyl). Carbon atoms are not known to form stable structures with this geometry. Since applicants have not taught how to make such a structure and the art recognizes this as a violation of acceptable stable atomic valence for carbon, applicants are not enabled for mixtures containing compounds of such a structure. Applicants are also directed to the accompanying rejection under 35 USC 101 below.

24. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

25. Claim 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 17 and 18 have been amended to recite that the compounds are further substituted with a chemical substituent. This is vague and indefinite because it is vague and indefinite because it is unclear what chemical substituents are being substituted or where the compounds are being substituted with these substituents. Therefore, it is not possible to determine the metes and bounds of the invention as claimed.

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***Conclusion***

26. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph W. Ricigliano Ph. D. whose telephone number is (703) 308-9346. The examiner can be reached on Monday through Thursday from 7:00 A.M. to 5:30 P.M.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (703) 308-0196.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald E. Adams Ph. D., can be reached at (703) 308-0570.

Joseph W. Ricigliano Ph. D.

  
PONNATHAPURA ACHUTAMURTHY  
PRIMARY EXAMINER  
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